230806

MEMORANDUM

TO: GENE FOWLER, CASE MANAGER, BNCM

THRU: DAVID HAYMES, SECTION CHIEF, BEERA DH

FROM: TERRY MCADAMS, TECHNICAL COORDINATOR, BEERA

SITE: UNIMATIC MANUFACTURING CORPORATION
FAIRFIELD TOWNSHIP, ESSEX COUNTY
ISRA CASE #: E20010335

Referral Type: Remedial Investigation Report(RIR)- Soils
Referral Date: 12/03/03
Document Date: 11/05/03
PAC Codes: V3W2 Job Code: A1988200
Completion Date: 2/2/04

NOTE TO CASE MANAGER: All items that require further investigation and submittals by the RP, or actions of the Case Manager, are highlighted in bold below.
Note also that there are groundwater issues at this site that will directly impact the soils remediation activities at the site. Therefore, a BGWPA geologist should be assigned to this case as soon as possible.

SUMMARY:

The Unimatic Manufacturing Corporation (Unimatic) property is a 1.23 acre former manufacturing facility located at Block 2303, Lot 8, 25 Sherwood Lane, Fairfield Township, NJ. The company operated an aluminum die-casting manufacturing business at this site since from 1955 to 2001, making extensive historic use of PCB-laden lubricants. The site has a well-documented history of PCB soil contamination, some of which has migrated off-site. Extensive soil excavation has already been performed at the site. Groundwater PCB contamination has also been documented at the site. A 4/3/03 DEP letter responding to RIR submittals on 6/7/02, 8/9/02 and 10/29/02 required submittal of another RIR addressing interior and exterior PCB delineation, off-site PCB migration, groundwater contamination, institutional and engineering controls, historic fill sampling, septic system sampling, as well as sampling of soils under a leaking on-site drum.

The present 11/5/03 RIR, prepared and submitted on behalf of Unimatic by GZA GeoEnvironmental, Inc. (GZA), was submitted in response to the requirements detailed in the aforementioned DEP letter.

This review focuses on the on-site and off-site soils sampling for PCBs and VOCs performed by GZA, as well as GZA's proposals for restricted sampling and engineering

controls at the site. A quality assurance/quality control (QA/QC) review of the laboratory data deliverables for these sampling events is also included. All comments will be forwarded to the Case Manager. It should be noted that no groundwater sampling was performed as part of the round of sampling reported in this RIR.

THIS RIR IS CONDITIONALLY ACCEPTABLE, SUBJECT TO REVIEW OF THE SUBMITTAL ITEMS REQUIRED BELOW.

A. Property

The Unimatic site shares a common border to the north and northwest with lands owned by the Jersey City Municipal Utilities Authority (JCMUA). The 1.23 acre site has one approximately 220 x 80 foot building located in the northwest corner of the site. Five interior floor trenches were formerly located in the building.

B. Historical Operations

There is no site history offered in the submittals, other than that Unimatic engaged in the aluminum die-casting manufacturing business.

C. Potential Contaminants of Concern

PCBs, VOCs, PP metals.

D. Wastewater Discharges

Two exterior underground septic systems were formerly sited immediately to the south of the building. One exterior buried wastewater outfall pipe formerly exited the northern wall of the building and continued along that wall in an easterly direction, stopping short of the eastern property line. Another exterior wastewater outfall pipe formerly exited the eastern wall of the building and continued to the northern property line .

E. Areas of Concern (AOC)s

The six AOCs in this RIR listed below are identified based on their location on the site. Soil borings located at all AOCs are indicated in detail on the 10 site plan figures included in the RIR. These figures are arranged in soil depth layers to indicate the analytical results of samples taken at various soil boring depths.

Interior PCB and VOC investigation.

Exterior PCB investigation – eastern and northern portions of the site.

Exterior PCB investigation - adjoining northern JCMUA property.

Former septic systems investigation - southern portion of site.

VOC investigation – eastern portion of site.

F. Prior DEP Actions

The Department has been involved in the continuing study and remediation of this site since 2001. The most recent DEP action was the aforementioned 4/3/03 comment letter.

RIR

The following comments on the RIR submitted by GZA are in response to your referral.

Note: GZA reports that, wherever possible, soil sampling to complete horizontal and vertical delineation at the AOCs below was continued until either the RDCSCC was attained or a until a contamination gradient was established as required at N.J.A.C. 7:26E-4.1(b)2. GZA has mistakenly called this regulatory requirement the "order of magnitude rule." **GZA shall correct this error in future submittals.**

Note also that **Unimatic and GZA shall provide more history of the site that may indicate exactly when the PCB contamination occurred at the site.**

AOC - Interior PCB and VOC investigation.

GZA was required in the 4/3/03 DEP letter to investigate all interior trench areas, as well as the areas where the two waste water pipes originated and ran through the building. GZA performed soil sampling for PCB analysis in these interior areas. For initial PCB characterization, four soil borings were advanced through the concrete building floor to a depth of 3.5 feet below grade (bg), approximately 1 – 2 feet below the bottom of the former trenches. PCBs were detected in samples from all four borings at levels above the RDCSCC of 0.49 ppm. 11 more borings were advanced and samples collected at depths ranging from 2.0 feet bg to 13.5 feet bg to delineate the PCBs under the building both horizontally and vertically. Nine of the borings were refused at varying depths due to very thick (up to 24 inches) concrete or two thick layers of concrete, resulting in a reduction in the total number of sampling locations. From a total of 21 successful sampling locations, PCB levels above the RSDSCC were detected in 14 samples. The sample locations, depths and analytical results are plotted in Figures 3 – 6 of the RIR.

GZA also reported elevated PID readings from five bore holes within the building, and that subsequent analysis of samples taken from intervals with the highest PID readings did not reveal any targeted VOC levels above the RDCSCC.

Proposal:

GZA reports that horizontal and vertical delineation is not complete in the building interior, due to boring refusals at several sampling locations at this AOC. Given the thickness of the concrete floor, the PCBs at this AOC could not be removed without significant disruption of facility operations, and there are no proven *in situ* treatment technologies for PCBs. Furthermore, the concrete floor acts as an effective cap preventing exposure of building occupants to the PCBs. Therefore, GZA proposes that the PCBs be left in place and maintained using institutional controls, with the concrete

floor capping the soils as an engineering control. GZA proposes no further VOC investigation in the building interior.

BEERA Comments: Proposal unacceptable.

GZA has made an effort to comply with the requirements of the 4/3/03 DEP letter (page 2, paragraph 4). It is noted that, of the five borings that GZA was able to advance to the 13-13.5 foot interval bg, three had no detectable levels of PCBs, and the other two had levels of .97 and 2.0 pm. While these results, in conjunction with results from shallower intervals in these same borings, are not sufficient to establish acceptable contamination gradients and complete vertical delineation, they do infer that the PCB contamination under the building is very low (2.0 ppm or less) at the 13.5 feet bg level. Horizontal delineation in the building is likewise incomplete, but indicates that there is little or no contamination in soils under the southern and western portions of the building. Contamination appears to be concentrated in the northern and eastern portions of the building.

GZA's proposal to leave the PCB contaminated soil under the building in place and use the concrete floor as a cap is not acceptable at this time. **GZA shall first establish the source of the soil contamination under the building, as well as the date when the present concrete floor was installed.** If the floor was installed before the source of the PCBs was eliminated it is possible that the PCBs are present in the concrete floor. **GZA shall then perform appropriate sampling of the concrete flooring in the vicinities of the borings with elevated PCB levels to determine if the concrete is contaminated. Such sampling shall consist of both surface wipe samples and also destructive samples of at least the top one inch of concrete, and then at two-inch intervals after that depending on the extent of the contamination.** If the concrete is contaminated, **Unimatic shall submit a statement of the future intended use of the building.** This statement, along with the new analytical data on the concrete flooring and soils under the building required herein, will guide the Department and GZA in determining what, if any, further sampling and remediation of the concrete flooring and underlying contaminated soils is necessary.

If the concrete flooring in the building is not contaminated, **GZA shall make a renewed effort to complete horizontal and vertical delineation of the PCB contamination under the building, particularly in the vicinities of borings FT-4A, 4B, 7, 10, 12X and 13X, as well as refused borings FT-14, 15 and 18, and SB-72.**

The VOC investigation in the building interior is not acceptable. GZA reported VOC sampling at five bore holes with elevated PID readings. However, one bore hole (FT-10) had a PID reading of 300 ppm, but was not sampled, whereas boring FT-11 had a PID reading of only 40 ppm as the highest reading for that boring, but was sampled. **GZA shall explain this discrepancy, re-sample boring FT-11 and report the analytical results for VOC+10 in the next submittal.**

Lastly, the following samples at this AOC may not be used for delineation or no further action determinations due to deficiencies (sample storage temperatures) in sampling Quality Assurance/Quality Control (QA/QC) noted in the Data Review section of this review (below):

FT-1A(3-3.5 feet bg)
FT-3A(3.5-4 feet bg)
FT-2A(3.5-4 feet bg)
FT-4A(3.5-4 feet bg)

Also note that the depths of these four samples were incorrectly reported on the site map (Figure 3). **GZA should resample at these four sampling locations and submit the analytical results in the next submittal.**

AOC – Exterior PCB investigation – eastern and northern portions of site.

The 4/3/03 DEP letter required delineation of post-excavation samples in the eastern portion of the site taken from borings PE-14, PE-15 and SB-27. GZA also installed borings to delineate samples from sampling locations PE-12, AST-1B, 2B and 3B. 17 borings were advanced to attempt the requested horizontal and vertical delineations.

In the northern portion of the site, 66 sampling locations were installed to further delineate the extent of contamination along the path of the former northern outfall pipe. The soils from these two portions of the site were determined to contain PCBs in excess of the RDCSCC in a sloping wedge of contamination extending northeast from the northern and eastern walls of the building. PCB exceedences extend well below the water table, located at approximately 16 feet bg at this site. GZA reported that the impacted soils below the 30 foot bg level could not be delineated because the large head of ground water prevented effective collection of soil samples from these depths.

Proposal: GZA proposes to excavate the accessible soils in the northern portion of the site and dispose of them off-site at a licensed disposal facility. However, approximately 300 tons of PCB-impacted soils are present well below the water table at depths of 25-33 feet bg. The maximum concentrations of PCBs at these depths is 234 ppm, nearly an order of magnitude below the maximum concentrations at other sampling locations of the site (e.g., 2061 ppm at soil boring PE-14), though above the target standard of 100 ppm discussed in previous correspondence with the Department. GZA maintains that these soils cannot be economically excavated. GZA therefore proposes that these soils be left in place unless it is clear that remediation is necessary to prevent ground water contamination at this site.

BEERA Comments: Proposal conditionally acceptable.

The delineation of the PCB soils impacts in this area of the site is acceptable as a guide for future excavation of these soils. **Additional post excavation sampling is required to complete delineation of these portions of the site.**

The proposal to not excavate those soils in this area of the site that lie below the water table and that have PCB concentrations in excess of 100 ppm is <u>not acceptable</u>. However, the proposal to excavate only those soils in this area of the site that are contaminated above the 100 ppm level is acceptable with conditions. **Unimatic may delineate and remediate all the PCB contaminated soils in these exterior portions of the site to the 100 ppm level, <u>including</u> soils below the water table, <u>only</u> if they can demonstrate, via Department approved monitoring, that the remaining contaminants are not impacting and will not impact groundwater. Otherwise, GZA shall delineate and remediate all PCB contaminated soils in this area of the site to the 50 ppm level.**

It is noted that GZA did not perform any ground water sampling as part of the present RIR, but will report on planned monitoring well installation and ground water monitoring activities in a future report. As the depth of the PCB contamination at this site is unusual

and of great concern to the Department, a **comprehensive ground water investigation of the site shall be submitted for review before the Department can commit to any remediation plan for this site**

The following samples at this AOC may not be used for on-site or off-site delineation or no further action determinations due to deficiencies in sampling QA/QC (sample storage temperatures and/or surrogate recoveries and/or sample holding time) noted in the Data Review section of this review (below):

SB-27A(10-10.5 feet bg)
SB-27A(14-14.5 feet bg)
SB-30A(15.5-16 feet bg)
SB-30A(19.5-20 feet bg)
SB-31A(16-16.5 feet bg)
SB-34A(15.5-16 feet bg)
SB-34A(19-19.5 feet bg)
SB-53A(2.5-3 feet bg)
SB-53A(6-6.5 feet bg)
SB-54 (3-3.5 feet bg)
SB-80 (3-3.5 feet bg)
SB-80 (8-8.5 feet bg)
SB-81 (3-3.5 feet bg)
SB-81 (8-8.5 feet bg)
SB-94 (28.5-29 feet bg)
PE-13A(20-20.5 feet bg)
PE-16A(20-20.5 feet bg)
PE-17A(16-16.5 feet bg)
PE-17A(20-20.5 feet bg)
PE-18A(20-20.5 feet bg)

GZA should resample all of the above sampling locations that are to be used for delineation and include the analytical results in the next submittal.

Lastly, in the data review of the sampling performed at this AOC, it was noted that a sample labeled "Outfall Pipe" with a laboratory ID # 21101138-005 had a reported TPHC level of 9930. **GZA shall address this elevated TPHC level at this AOC in the next submittal, reporting the exact location of this sample on a site map as well as the potential source of the TPHC contamination.**

AOC - Exterior PCB investigation - adjoining northern JCMUA property.

GZA reported vertical and horizontal delineation sampling of soil samples PE-2 and SB-38 on the adjoining JCMUA property, as requested in the Department's 4/3/03 letter.

Proposal: GZA maintains that delineation of the PCB contaminated soils at this AOC is complete and plans to excavate the soils as part of the next remedial action phase of work.

BEERA Comments: Proposal conditionally acceptable.

Sample PE-2 must be delineated after further excavation to the RDCSCC off-site to the east. Sample SB-38 is sufficiently delineated to the east and west, but the northern sample, SB-40, was not taken at depths consistent with the contamination at SB-38. **GZA must complete the off-site delineation of sample location SB-38 at the 10 – 10.5 foot interval bg.**

In the 4/3/03 letter, the Department also requested the off-site delineation of samples SB-27 and TP-1. The off-site delineation of SB-27 appears to have been completed by samples SB-59 and 65. However, sample location TP-1 does not appear on the site maps submitted with this RIR. **GZA shall identify the sample location TP-1 on a site map and provide the analytical results for this sample in the next submittal.**

AOC - Former septic systems investigation - southern portion of site.

GZA estimated the dimensions of these two underground tanks formerly buried south of the building to be 10 – 12 feet in diameter with invert depths of 8 – 10 feet bg, based on past experience with these types of septic systems. Two former buried pipes connecting the tanks to the building were estimated to be 2 feet bg. As required in the 4/3/03 DEP letter, GZA attempted to advance four soil borings around the perimeter of each tank to a depth of 12 feet bg, and one boring in the approximate area of each connector pipe to a depth of 3 feet bg. Three soil borings around the western tank met with refusal at 10 feet bg, and one boring around the eastern tank met with refusal at 8 feet bg. No elevated PID readings or septic odors were noted from these 10 borings. Samples from all borings were analyzed for PCBs, as well as for TPHs to identify non-PCB related petroleum spills. The three samples with the highest TPHs (142, 95 and 81 ppm) were analyzed for VOCs and BNs as contingency analysis. No targeted VOCs or BNs were detected above the RDCSCC.

Proposal: No Further Action.

BEERA Comments: Proposal not acceptable.

It is not clear how GZA determined the locations and sizes of the former septic systems, and exactly when the systems where removed. Also, no leach field was indicated on the site map, nor was there any report of a leach field being sampled. The fact that soil borings in the vicinity of these two tanks met with refusal at relatively shallow depths (compared to borings in other areas of the site) indicates that the underground tanks, or related piping may still be in place. **GZA shall submit all available as-built drawings for the septic systems, or any other documentation that would indicate the precise size and location of all the septic system components. GZA shall also excavate in the area of the septic systems to determine the cause of the boring refusals. Lastly, GZA shall include the sampling for priority pollutant metals (PPm) at this AOC.** After review of these submittals, the Department shall determine what, if any, additional investigation is required at this AOC.

AOC - VOC investigation – eastern portion of site.

As required in the 4/3/03 DEP letter, GZA performed re-sampling and VOC analysis of soil samples SB-25 and 49, due to reported elevated PID readings. No targeted VOCs or BNs were detected above the RDCSCC at these two sampling locations.

Proposal: No further VOC sampling should be preformed at this AOC.

BEERA Comments: Proposal is conditionally acceptable.

The 4/3/03 DEP letter also notes that the boring log for SB-36 indicated elevated PID readings, but the actual readings were not provided. Unimatic was required to clarify if

these high PID readings were addressed. No such clarification is included in the present RIR. **Therefore, GZA shall re-sample at boring SB-36 and report the analytical results, including VOC+10 analysis, in the next submittal.**

ADDITIONAL COMMENTS:

Historic Fill

The 4/3/03 DEP letter required Unimatic to propose additional sampling to establish that metals contamination found at sampling location TP-1 is the result of historic fill. **As required above, location TP-1 shall be located on a site map. If this sampling was performed, the results shall be reported for review. Else, GZA shall propose this additional sampling in the next submittal.**

Leaking Drum

In the 4/3/03 DEP letter, the Department required sampling of the vicinity of a reported leaking drum and analysis for PP+40. **GZA did not address this requirement in the present RIR and must do so in the next submittal.**

Soil Boring Logs

In its discussion of the VOC sampling in the building interior, GZA reported an elevated PID reading at boring FT-7. However, no such PID reading was recorded in the boring log for this boring and the log indicated that no samples were taken. **GZA shall explain this discrepancy.**

The soil boring logs for all reported sampling included in the RIR are otherwise acceptable as presented.

Data Review

Data review corresponds to the data deliverables volumes for six separate sampling events. The first, titled "Analytical Results Summary," corresponds to sampling performed on 10/29/01 and is dated 11/14/01. This report was missing from a prior RIR submittal and is being submitted for review at this time. The other five data deliverables volumes, RIR Volumes 2 through 6, correspond to sampling performed on 5/8, 6/2, 6/4, 7/16, and 8/27/03. As a general comment, none of these volumes have a table of contents, a deficiency that delayed completion of the review of these data deliverables. **GZA shall ensure that a complete table of contents is included in all future data volumes.** Another concern and cause for confusion is the unit of measurement (ppb) used to report the VOC analytical results for soil samples. The usual unit of measurement for this type of soils analysis is ppm.

Analytical Results Summary dated 11/14/01: In this report, a sample labeled "Outfall Pipe" with a laboratory ID # 21101138-005 had a reported TPHC level of 9930. As required in the BEERA comments on the AOC - Exterior PCB investigation – eastern and

northern portions of the site, above, GZA shall address this elevated TPHC level at the building exterior AOC in the next submittal. In the Aqua Pro-Tech Laboratories (APL) chain of custody document included in the report, which included VOC analysis, no sample storage temperatures were recorded. This is the second time APL has submitted a chain of custody form including VOC analysis for this sampling event without recording the required temperatures. The first time this was done, the Department, in its 4/03/03 letter, said the data was not acceptable. These storage temperatures are required by N.J.A.C. 7:26E, Appendix A, IV(C). Therefore, the data for the samples included in this report are unacceptable for delineation of a clean zone or for determinations of no further action at the five sampling locations in this report. **GZA shall propose re-sampling any of these sampling locations that are to be used for delineation or no further action determinations.**

RIR Volume 2 of 6: This data deliverable volume corresponds to the 5/8/03 sampling event. In the APL chain of custody document included in the report, which included VOC analysis, no sample storage temperatures were recorded. This is the third time APL has submitted a chain of custody form including VOC analysis without recording the required temperatures. These storage temperatures are required by N.J.A.C. 7:26E, Appendix A, IV(C). Therefore, the data for the 18 samples included in this report that are used to delineate on-site and off-site contamination are unacceptable. **GZA shall propose re-sampling any of these sampling locations that are to be used for delineation or no further action determination.** Data for samples ST-1 through 10 were not reviewed as the results were not used in the preparation of this RIR.

RIR Volume 3 of 6: This data deliverable volume corresponds to the 6/2/03 sampling event. The data in this volume are acceptable as presented.

RIR Volume 4 of 6: This data deliverable volume corresponds to the 6/4/03 sampling event. Samples SB- 69 (2.5-3 feet bg) and SB-71(2.5-3 feet bg) each had one surrogate recovery outside QA/QC limits. The data in this volume are acceptable as presented.

RIR Volume 5 of 6: This data deliverable volume corresponds to the 7/16/03 sampling event. Samples SB- 82 (8-8.5 feet bg) and SB-82(19-19.5 feet bg) each had one surrogate recovery outside QA/QC limits. However, samples SB-54 (3-3.5 feet bg), SB-80 (3-3.5 feet bg), SB-80 (8-8.5 feet bg), SB-81 (3-3.5 feet bg) and SB-81 (8-8.5 feet bg) each have two surrogate recoveries outside QA/QC limits. Therefore the analytical results of these four samples are unacceptable due to having two surrogate recoveries outside QA/QC limits for each sample. **GZA shall propose re-sampling this sampling location if it to be used for delineation or no further action determinations.** Otherwise the data in this volume are acceptable as presented.

RIR Volume 6 of 6: This data deliverable volume corresponds to the 8/27/03 sampling event. Sample SB-94(28.5-29 feet bg) had a holding time recorded (19 days) that is unacceptable. Also, for this sample, no sample storage temperature was recorded. This is the fourth time APL has submitted a chain of custody form without recording the required temperatures. These storage temperatures are required by N.J.A.C. 7:26E,

Appendix A, IV(C). Therefore, the data for this sample are unacceptable. **GZA shall propose re-sampling this sampling location if it to be used for delineation or no further action determinations.** Otherwise the data in this volume are acceptable as presented.

Groundwater Investigation

As stated above, the groundwater investigation of this site has been deferred to the BGWPA. No groundwater data was collected in this round of sampling.

Further BEERA Comments: Additional comments can be offered after the submittals required above are made by the RP.

cc: Rob Lux, BGWPA
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